

Anthrax edwardsii, sp. nov.

Black, the legs, excepting apex of tarsi, yellowish. Pile of front and face black, the tomentum coppery; face slightly retreating below, proboscis not projecting beyond the epistoma; base of third antennal joint very short sub-conical, the remaining portion slender and sub-linear; tomentum of occiput, middle of thorax and scutellum coppery; pile on sides of thorax white, that on the front end and on the pleura yellowish-white except a stripe of black pile on upper part of pleura and a narrow fringe of the same color next the head, continued across the front end of the breast, remaining pile of breast yellowish-white. Tomentum on bases of abdominal segments two to five black, that on the apices and on the whole of the sixth and following segments, coppery; the dense pile of the first segment, and on front half of the sides of the second segment, yellowish-white, that on sides of the remaining portion of the abdomen black, bordered above with yellowish-white; pile of venter white, that at the apex largely black. Legs not fringed with erect scales, yellow tomentose, the pile and bristles black; front tibiae destitute of bristles, claws of front tarsi small; pulvilli wanting. Wings hyaline, the base brown, the outline of this color distinct, extending from apex of the auxiliary vein transversely to the second, then basally a considerable distance, then transversely to the last third or fourth of the discal cell, then basally to the small crossvein, then across the discal and fourth posterior cells slightly before the base of the third, then curving through the anal cell slightly beyond its middle and obliquely crossing the axillary cell near its first third; crossvein within the brown bordered with yellowish white. Length, 6 to 10 mm.

One specimen, Vancouver Island; five specimens, San Francisco district, California. Collected by the late Hy. Edwards. Types in American Museum of Natural History and in my collection.

**NOTES ON THE TENTHREDINID GALL OF
EUURA ORBITALIS ON SALIX AND ITS
OCCUPANTS.**

By C. H. TYLER TOWNSEND.

From July 8 to 11, 1892, there were found in the Grand Cañon, Arizona, 2500 ft. below south rim at Hance's, great numbers of elongate stem-galls on a narrow-leaved *Salix* sp., probably *S. longifolia* Muhl. These galls are simply an enlargement of the twig or stem of the willow. Many were empty at this date, with an exit hole in the side. Others were still inhabited, and contained small whitish larvae, apparently hymenopterous.

The same galls were found very plentiful in the Alameda near Las Cruces, N. M., Nov. 14, 1892, on *S. longifolia*. One gall opened contained a whitish tenthredinid larva with blackish head. Seven more of the galls opened this date contained 10 small oval pure white larvae, 3 large whitish tenthredinid larvae with brown

heads, and a blackened pupa probably of the latter. There were either two of the first in one gall, or two of the second, or else one of each, each one of the seven galls having always just two occupants. The small white larvæ are those of a hymenopterous parasite. The sawfly is the gall maker. When the larvæ of the latter occurred in the gall the channel was accordingly large and filled with much frass. The cells containing the small white parasite larvæ were much smaller. The parasite was bred and determined as *Eurytoma studiosa* Say.

These galls extremely resemble those of *Cecidomyia rigide*, O. S., galls of which species have been sent me by Mr. T. D. A. Cockerell, collected at West Cliff, Colo. (see Ckll., *Entom*, 1890, p. 278). The three galls sent me by Mr. Cockerell are of somewhat different form from the tenthredinid galls above mentioned, and were very evidently formed near terminal end of shoots. They are from 1 to $2\frac{1}{2}$ times as long as broad, one being quite rounded in outline. They measure 10 mm., 15 mm., and 20 mm. in length; and 8 mm., $7\frac{1}{2}$ mm., and 7 mm. in greatest width respectively.

The galls collected in the Grand Cañon, July 11, are not as large as those just mentioned from Las Cruces. They were more frequently near the terminal portion of the shoot. Most of them are considerably shrivelled, having been apparently made in the recent growth near terminus, and measure from 17 to 32 mm. in length, and $2\frac{1}{2}$ to $4\frac{1}{2}$ mm. in greatest width. Two others that are not shrivelled measure 22 and 24 mm. in length, and about 6 mm. each in greatest width.

The galls which I collected in the Grand Cañon, and at Las Cruces, are generally somewhat more elongate in form, and usually occurred at a considerable distance from the terminal end of the shoot, though some were observed to be more or less terminal. The measurements of 40 galls collected at Las Cruces, Nov. 14, as above referred to, are as follows: From 7 mm. in length, by 5 mm. in greatest width; to 50 mm. in length, by 8 mm. in greatest width. These are the shortest and longest. Another one which measured nearly 50 mm. long, was about $7\frac{1}{2}$ mm. wide. The narrowest measures hardly 4 mm. in width, by about 22 mm. in length. The next narrowest is $4\frac{1}{2}$ by 11 mm. There were none wider than the above mentioned longest one. Two which were same width, 8 mm., measure 19 mm. and about 23 mm. in length. The average full size of these galls is about 7 mm. in width, by from 27 to 31 mm. It will therefore be seen that they vary much

in size. Sometimes two or more galls occur in close proximity to each other on the same stem. From these 40 galls, which were placed in a glass jar Nov. 14, 1892, nothing had issued up to March 24, 1893. On April 4, 1893, from 13 galls that had been laid aside, six sawflies were found issued and dead, except one which was alive. Three more were found issued and dead from same galls, April 9, 1893. From the other 27 galls there were found issued April 9, 1893, 4 live sawflies and 12 dead ones.

The following are descriptions of the occupants of this gall.

Larva of *Euura orbitalis* Nort.—Length, 5 to $8\frac{1}{2}$ mm.; width, $1\frac{3}{5}$ to 2 mm. Entirely pure white, except head which is pale brownish with a blackish shade. Head very round in outline from before, with a darker circular central area. Eyes darker, situated on outer anterior edge of head, consisting of a single large round raised ocellus. Antennæ apparently consisting of a single flattened basal joint, which is partially sunken in a shallow cavity in front of the eye. Mandibles strong, widened on base, a little narrowed and rather truncate on apex, 3-toothed blackish on apex. Maxillæ 3-jointed, basal two joints very stout, first longer and a little stouter than second, third joint very slender and about as long as second. Maxillary palpi 3-jointed, joints about equal, the apical joint a little smaller than the basal. Labial palpi 3-jointed, joints about equal in length, basal stout, second about one-half width of basal, terminal joint very slender. Head chitinous and thinly hairy, rest of larva fleshy and naked. Three pairs of well formed thoracic legs, apparently 4-jointed. Abdominal segments 5 to 10 each on ventral surface with a pair of short leg like prolongations of the integument. Segments very nearly equal in length. Body widest on last two thoracic segments, the prothoracic segment narrower, and head narrower still. The abdominal segments somewhat narrower than the last two thoracic, about equal except 12 and 13 which are successively narrowed.

Described from 3 specimens, extracted from galls Nov. 14. The above mentioned specimen of the pupa is unfit for description.

Larva of *Eurytoma studiosa* Say.—Length, $1\frac{4}{5}$ to 3 mm.; greatest width $1\frac{1}{5}$ to $1\frac{1}{2}$ mm. Wholly pure white, except the very small brownish mouth parts. Oval in shape, thick, plump, and fleshy, apodous, consisting of 13 segments but appearing 14-jointed from an extra joint showing at anus. Segments nearly all equal in length, the body widest on segments 7 and 8, very gradually narrowing and rounded anteriorly, more rapidly narrowing to a tip posteriorly. Head situated on ventral aspect, the whole capital segment invisible from above in the natural slightly curved position of the larva. Mouth parts, so far as apparent, consisting simply of a whitish labrum and two small brownish chitinous jaws, the latter rather stout and lighter colored at base, pointed and sharp at apex and notched on outer side near base. Head plate or segment narrowed, very thinly hairy. Larva anteriorly with a few hairs, rest apparently naked.

Described from 9 specimens, taken from galls, Nov. 14

I am indebted to Mr. Wm. H. Ashmead for identifying the host and parasite.